Creating and Modifying a Continents Graphics Method

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Goal: Guide you through choosing defined continents.

Before running the tutorial below, type *"python"* or *"cdat"* at the command line.Â You will see the python prompt appear (i.e., ">>>"). You can now enter the command lines below.

You can ***view***Â or ***download***Â the full source code. To run the source code at the command line, type: *"python continents_file.py"*.

```
# Import the modules needed for the tuturial
# cdms - Climate Data Management system accesses gridded data.
# vcs - Visualization and control System 1D and 2D plotting routines.
# cdutil - Climate utilitizes that contains miscellaneous routines for
#          manipulating variables.
# time - This module provides various functions to mainpulate time values.
# os - Operation System routines for Mac, DOS, NT, or Posix depending on
#      the system you're on.
# sys - This module provides access to some objects used or maintained by
#       the interpreter and to functions that interact strongly with the interpreter.
import vcs, cdms, cdutil, time, os, sys

# Open data file:
filepath = os.path.join(sys.prefix, 'sample_data/clt.nc')
cdmsfile = cdms.open( filepath )

# Extract a 3 dimensional data set and get a subset of the time dimension
data = cdmsfile('clt', longitude=(-180, 180), latitude = (-90., 90.))

# Initial VCS:
v = vcs.init()
```

The VCS module contains a list of persistent continents graphics method objects. To view this list issue the "show" command.

```
# Show the list of persistent continents graphics methods.
v.show('continents')

**********************Continents Names List**********************
(   1):                 ASD                 def1              default

**********************End Continents Names List******************
```

Get a continents graphics method object and plot:

```
# Assign the variable "ct_asd" to the persistent 'ASD' continents graphics methods.
ct_asd = v.getcontinents( 'ASD' )

# Plot only the the above continents graphics method.
v.plot( ct_asd )
```

List the 'ASD' continents graphics method attributes by issuing the following command:

```
# List the 'ASD' boxfill graphics methods attributes.
ct_asd.list()

----------Continents (Gcon) member (attribute) listings ----------
Canvas Mode = 1
graphics method = Gcon
name = ASD
projection = linear
xticlabels1 = lon30
xticlabels2 = lon30
xmtics1 =
xmtics2 =
yticlabels1 = lat20
yticlabels2 = lat20
ymtics1 =
ymtics2 =
datawc_x1 = 1.00000002004e+20
datawc_y1 =  1.00000002004e+20
datawc_x2 =  1.00000002004e+20
datawc_y2 =  1.00000002004e+20
line =  solid
linecolor =  None
linewidth =  None
type =  1
```

# Change 'ASD' continents graphics methods attributes by entering the following commands.
ct_asd.line = 2 # set the line type
ct_asd.linecolor = 242 # set the line color
ct_asd.linewidth = 3 # set the line width
ct_asd.type = 3 # change the continents type to the 'Fine Continents'

Overlay continents:

```
# Clear the VCS canvas and plot data using the boxfill graphics method.
# Also use the predefined template 'ASD' and plot with no continents.
v.clear()
v.plot( data, 'ASD', continents=0 )

# Now overlay the 'ASD' continents using the 'ASD_dud' template.
# The 'ASD_dud' template omits all text and only plots the data.
v.plot( ct_asd, 'ASD_dud' )

# Change the continents attributes for better viewing
ct_asd.line = 0            # change to solid line
ct_asd.linecolor = 241     # change the line color to black
ct_asd.linewidth = 2       # change the line width to 2
ct_asd.type = 5               # change the continents type to the 'United States'
```

Modifying the default continents:

```
# Clear the VCS canvas and plot data using the boxfill graphics method.
# Also use the predefined template 'ASD' and plot with no continents.
v.clear()
v.plot( data, continents=4 )
```

```
# Now get the line 'continents' object.
lc = v.getline('continents')
lc.list()

----------Line (Tl) member (attribute) listings ----------
Canvas Mode = 1
secondary method = Tl
name = continents
type = ['solid']
width = [2.0]
color = [241]
priority = 1
viewport = [0.0, 1.0, 0.0, 1.0]
worldcoordinate = [0.0, 1.0, 0.0, 1.0]
x = None
y = None
projection = default
```

# Change line attribute values
lc.color=250
lc.width=2

v.clear()
v.plot(data, continents=4)

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